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THE MACHRIS BRAZILIAN EXPEDITION

BOTANY: Phanerogamæ, Leguminosæ

By RICHARD S. COWAN



CONTRIBUTIONS IN SCIENCE is a series of miscellaneous technical papers in the fields of Biology, Geology and Anthropology, published at irregular intervals by the Los Angeles County Museum. Issues are numbered separately and numbers run consecutively regardless of subject matter. Number 1 was issued January 23, 1957. The series is available to scientists and scientific institutions on an exchange basis. Copies may also be purchased at a nominal price.

The MACHRIS BRAZILIAN EXPEDITION from the Los Angeles County Museum was sponsored by Mr. and Mrs. Maurice A. Machris and Mrs. Maybell Machris Low. It was conducted under the auspices of the Museu Nacional do Brasil. Botanical and zoological collections were made from April through June, 1956, in the region of the headwaters of the Rio Tocantins in the state of Goiás. General accounts and itineraries are given in papers 1 and 2 of this series. Technical type specimens of new entities are deposited in the Museu Nacional in Rio de Janeiro.

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THE MACHRIS BRAZILIAN EXPEDITION

BOTANY: PHANEROGAMAE, LEGUMINOSAE

By RICHARD S. COWAN¹

The plant collections reported upon below were obtained by E. Yale Dawson, Expedition botanist, and are cited by his field collection numbers. Detailed locality data for these may be found in his general account of the botany of the Expedition². Briefly, however, specimens bearing numbers from 14133 to 14815 came from the Chapada dos Veadeiros, between São João da Aliança and Veadeiros, April 13-May 3, 1956. Those bearing numbers from 14816 to 15236 came from the region between Amaro Leite and Peixe, especially in the southern Serra Dourada, May 15-June 10, 1956.

The first set of specimens is deposited in the Los Angeles County Museum. This includes isotypes of the six new species and one new variety.

The three subfamilies are arranged systematically and the genera and species are arranged alphabetically. The geographical notes are based on the available literature and the herbaria of the United States National Museum and the New York Botanical Garden.

MIMOSOIDEAE

Calliandra dysantha Benth. 14556; 14736

Calliandra macrocephala Benth. 14539 A plant best-known in Minas Gerais but extending to the states of Paraná, Matto Grosso, and Goiás.

Mimosa lasiocarpa Benth. 14253; 14369 A poorly known species of southeastern Brazil, principally Minas Gerais.

Mimosa cf. *nervosa* Bong. 14544 This collection appears to be a recognizable form of this species but material is not sufficiently abundant to make an exact identification possible.

Mimosa polycarpa Kunth 15074 Not infrequent shrub in northwestern South America, south through southern Brazil, becoming more frequent in Argentina and Paraguay.

Mimosa pteridifolia Benth. 14691 A species of southeastern Brazil, known from the states of Matto Grosso, Bahia, and Goiás. One collec-

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²Dawson, E. Yale. 1957. The Machris Brazilian Expedition. Botany: General. Los Angeles Co. Mus. Cont. Sci. (2):1-20.

tion, Gardner 4123, was known previously from the latter state.

Mimosa trijuga Benth. 14673 A southeastern Brazilian species related to *M. somnians* H. & B. ex Willd. It is very poorly known; only a single previous collection, Macedo 3495, is in the United States National Herbarium, and it also is from Goiás.

Mimosa spp. 14156; 14365; 14441; 14545; 14552; 14694; 14780; 15035 Most of these almost certainly represent known species, but some of them may possibly be undescribed. I do not feel qualified to describe any of them, since dozens of species from southeastern Brazil are known in The New York Botanical Garden Herbarium and United States National Herbarium only by photos.


CAESALPINIOIDEAE

Bauhinia candelabriformis sp. nov.

Fig. 1

Arbuscula rigida, dense ramosa, 1.5 m. alta, ramulis pilis numerosis brevibus glanduloso-malpighiaceis; stipulae caducae; folia coriacea, profunde cordata, 1/4-1/3 bilobata, 7-nervia, petiolo 12-14 mm. longo, numerosis pilis glanduloso-malpighiaceis praeditis, foliorum lobis obtusis, plus minusve oblongis, 3.5-5 cm. longis, 3-3.5 cm. latis, supra glabris, infra venis primariis tomentellis, locis inter venas primarias pilis glanduloso-malpighiaceis ferentibus, supra venis primariis planis, infra salientibus; inflorescentiae terminales axillaresque, ca. 5-6 cm. longae, candelabriformas, dense rufo-strigulosae et pilis glanduloso-malpighiaceis praeditis, pedicellis 10-12 mm. longis; calycis lobi 4 cm. longi, lineares, intus glabri, externe dense strigulosi et pilis numerosis glanduloso-malpighiaceis; petala oblanceolato-lineararia, ca. 20 mm. longa, 1 mm. lata, glabra; stamina 5-5.5 cm. longa, basalter villosa intus; pistillum parce glanduloso-strigulosum, pilis malpighiaceis, stylo ca. 40 mm. longo; ovarium ca. 10 mm. longum, gynophoro 25 mm. longo; fructus ignotus.

A rigid, densely branched shrub, the youngest branchlets with numerous small, glandular-malpighian hairs; leaves coriaceous, 7-nerved, deeply cordate at the base and bilobed apically about 1/4 to 1/3 of the length, the lobes obtuse and oblong, 3.5-5 cm. long, 3-3.5 cm. wide, the petioles 12-14 mm. long with numerous glandular-malpighian hairs, the upper surfaces of the leaf blades glabrous, (except for glandular-malpighian hairs at the point of the attachment of the petiole), tomentellous below on the principal veins, glandular-malpighian hairs frequent in the inter-vein areas, the veins plane above, strongly salient below; inflorescences terminal and in the upper

Fig. 1. Holotype of *Bauhinia candelabriformis* Cowan. 



leaf axils, candelabrifform, densely strigulose and with numerous glandular-malpighian hairs, the pedicels 10-12 mm. long; calyx lobes 4 cm. long, linear, glabrous within, externally strigulose and with glandular-malpighian hairs; hypanthium ca. 1.5 cm. long, slightly striate longitudinally, the petals glabrous, oblanceolate-linear, about 1 mm. wide near the acute apex, 20 mm. long; style 40 mm. long, the ovary 10 mm. long, strigulose with sparingly scattered glandular-malpighian hairs, the gynophore 25 mm. long, glabrous.

TYPE: *Dawson 14581* (holotype R), "Sandstone outcrop 7 km. south of Veadeiros, region of the Chapada dos Veadeiros, Goiás, Brazil, April 24, 1956."

This is closely related to *B. malacotrichoides* described below, especially in the type and distribution of pubescence; for a description of the malpighian hairs, see the discussion following that species. The name *B. candelabrifformis* is given in allusion to the form of the inflorescence in this species; it differs from its near relative in having smaller leaves which are bilobed (instead of 2-parted), with fewer veins, shorter inflorescences and shorter flowers.

Bauhinia cupulata Spreng. 15036 Described from the state of Piauí (Gardner 2529) but recently collected along the Río Orinoco in Venezuela (Wurdack & Monachino 39861).

***Bauhinia elongipes* sp. nov.**

Fig. 2

Arbuscula 2-2.5 m. alta, ramulis minute strigulosis; folia tenuiter coriacea, biloba 2/3-4/5, lobis obtusis ad apicem, base rotundis, 3-nerviis, oblongiusculis, 3-3.5 cm. longis, 1.5-2 cm. latis, supra glabris, infra (venis primariis tomentellis exceptis) minutissime strigulosis et glanduloso-strigulosis (pilis malpighiaceis); pedicelli 25-30 mm. longi, minute strigulosi et glanduloso-strigulosi (pilis malpighiaceis); hypanthium 11-14 mm. longum, calycis lobis 7 cm. longis, externe minute strigulosis et glanduloso-strigulosis, intus glabris; petala linearia, ca. 20 mm. longa; stigma magnum, conicum; stylus ca. 30 mm. longus, glanduloso-strigulosus; ovarium ca. 15 mm. longum, glanduloso-strigulosum, gynophoro ca. 40 mm. longo, glabro; fructus ignotus.

A shrub 2-2.5 m. tall, the young branchlets very minutely strigulose and with numerous glandular-malpighian hairs; petioles 9-15 mm. long, the leaf blades thin-coriaceous, bilobed to within 1/5 to 1/3 of the base, the lobes obtuse apically, rotund at the base, oblongish, 3-nerved, 3-3.5 cm. long, 1.5-2 cm. wide, glabrous and plane on the upper surface, the primary veins salient and tomentellous beneath, the areoles very minutely strigulose and with numerous glandular-malpighian hairs, the secondary veins prominulous; inflorescence ter-



Fig. 2. Holotype of *Bauhinia elongipes* Cowan.

minal, the flowers borne in pairs 3-4 mm. above the subtending foliaceous bracts, the axis minutely strigulose and with many glandular-malpighian hairs; pedicels 25-30 mm. long, minutely strigulose, the flower buds about 8 cm. long, pubescent as the inflorescence axis; hypanthium 11-14 mm. long, the calyx lobes 7 cm. long, glabrous within, the petals linear, glabrous, 20 mm. long; filaments 5-7 cm. long, villose basally on the inner surfaces, the anthers 10 mm. long, linear; stigma large, conical, the style slender, about 30 mm. long, glandular-strigulose (malpighian hairs), the ovary linear, 15 mm. long, strigulose with glandular-malpighian hairs, the gynophore about 40 mm. long, glabrous.

TYPE: *Dawson 15051* (holotype R), "forest and forest margin along road 22-33 km. east of Formoso, region of the southern Serra Dourada, Goiás, Brazil, May 22, 1956."

B. elongipes is closely related to *B. curvula* and *B. pulchella* but it differs from both of these in having long, slender pedicels (hence the specific epithet) and larger flowers. The leaves of the new species are much more like those of *B. curvula*, and the obvious curvature in the flower buds also seems to link them.

***Bauhinia malacotrichoides* sp. nov.**

Fig. 3

Arbuscula ca. 1 m. alta, ramulis juvenilibus dense puberulis, stipulis caducis; folia bifoliolata, rigido-coriacea, venosa, petiolis 8-10 mm. longis, densissime puberulis; laminae 4-5-nerviae, 7-8 cm. longae, 4.5-5.5 cm. latae, ovaes, obtusae, supra glabrae, infra delapso-puberulae et pilis numerosis viscido-glandularibus malpighiaceis, supra 4-5 venis primariis planis, infra valde salientibus; inflorescentia terminalis, ca. 30 cm. longa, axe dense rufo-puberulo et glanduloso-puberulo, pedicellis 7-8 mm. longis, rufo-puberulis; flores 5 cm. longi, calycis lobis 4 cm. longis (hypanthio 1 cm. longo), externe dense appresso-puberulis et glanduloso-malpighiaceo-puberulis, intus glabris; filamenta 3-3.5 cm. longa, glabra, antheris ca. 8 mm. longis; pistillum glanduloso-malpighiaceo-puberulis, stylo 12 mm. longo; ovarium 11 mm. longum, lineare, gynophoro glabro, ca. 15 mm. longo; fructus ignotus.

A shrub about 1 m. tall with densely puberulent young branchlets; leaves coriaceous, bifoliolate, venose, the petioles 8-10 mm. long, densely rufo-puberulous and with a few small, glandular, malpighian hairs; leaflets with 4-5 veins each, 7-8 cm. long, 4.5-5.5 cm. wide, oval, obtuse, glabrous above (except densely pubescent at juncture with the petiole), puberulous below (the hairs more or less collapsed) and with numerous, small, glandular-malpighian hairs, the primary veins plane above, strongly salient beneath; inflorescence about 30

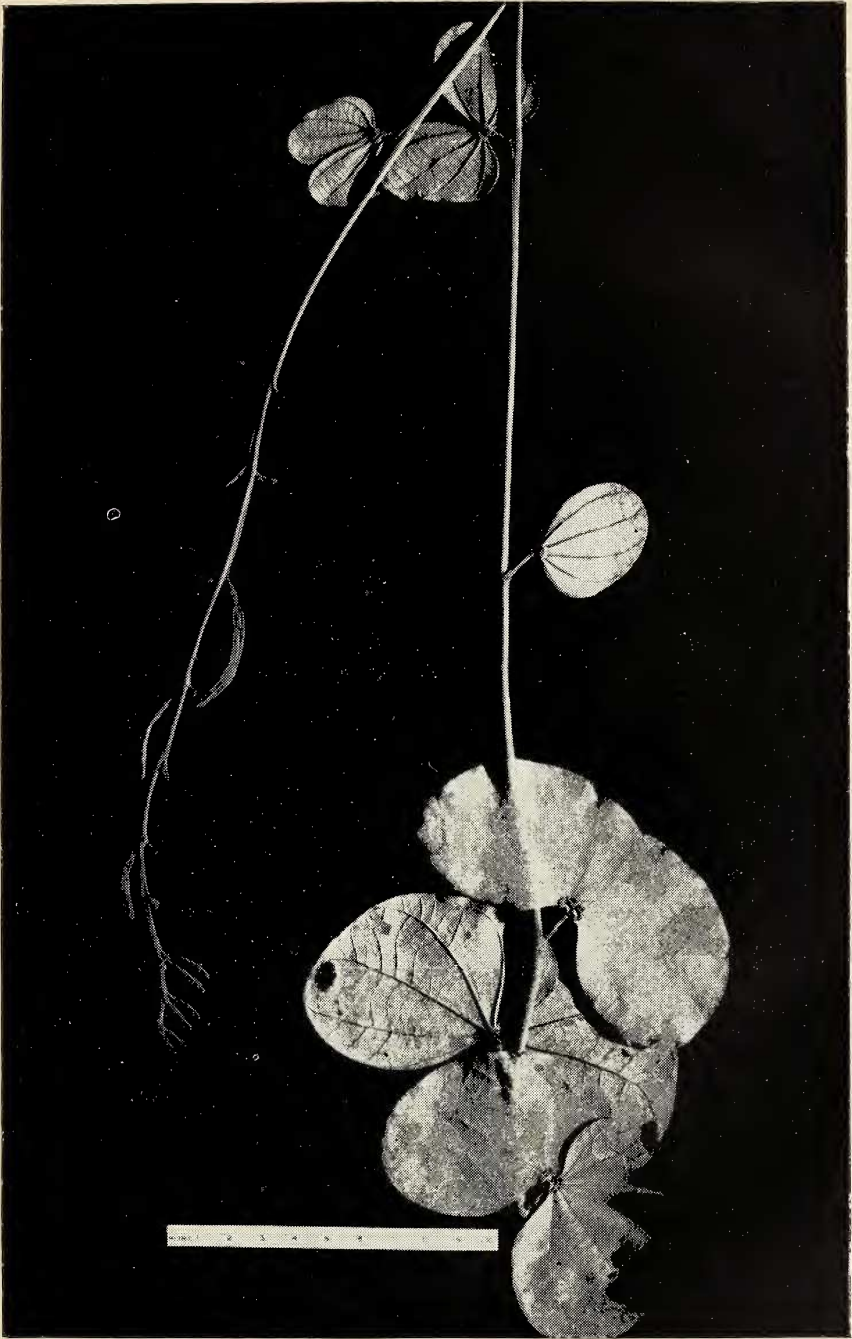


Fig. 3. Holotype of *Bauhinia malacotrichoides* Cowan.

cm. long, the axis densely puberulous with simple hairs and with small, glandular-malpighian hairs; flowers about 5 cm. long, the calyx lobes 4 cm. long, linear, glabrous within and puberulous on the outer surface, the hairs simple and glandular-malpighian; ovary and style glandular-puberulous, the hairs malpighian, the style 12 mm. long, the gynophore about 15 mm. long; fruit unknown.

TYPE: *Dawson 14293* (holotype R), "open grassy hilltop about 2½ km. northeast of the road, 21 km. north of São João da Aliança, region of the Chapada dos Veadeiros, Goiás, Brazil, April 16, 1956."

In a genus noted for extreme variation of leaf form, this species is quite striking. The leaflets are separate and so attached to the petiole as to remind one strongly of a butterfly in flight. The complete separation of the two parts of the leaf, the differences in kind and quantity of pubescence on the leaves, and the longer flowers serve to distinguish it from *B. malacotricha*. The pubescence is of two sorts: one type appears to be ordinary hairs which more or less collapse on the leaf surface (in drying?) and the other sort is a glandular-malpighian hair with very short arms. These occur in shallow depressions and give the lower surfaces of the leaflets a punctulate appearance. This type of hairs is not uncommon in the genus (at least in the Sect. *Pauletia*). Metcalf and Chalk in their work on the anatomy of the dicots mention "boatshaped" and glandular hairs as characteristic of many species of *Bauhinia*, but the feature seems not to be well-known.

Bauhinia recurva sp. nov.

Fig. 4

Arbuscula 2-2.5 m. alta, ramis plus minusve quadrangularibus, in quibusque faciebus unisulcatis, leviter pilosulis; folia coriacea, valde venosa, 9-nervia, 10.5 cm. longa, 6-7.5 cm. lata, biloba super medio, lobis acutis, base rotundo-truncata, supra glabra (pilosula costa excepta), infra in venis venulisque crispato-pilosula, areolis ultimis glabris, supra venis planis, infra venis venulisque salientibus; inflorescentia terminalis, pedicellis ca. 3.5 cm. longis, maturitate valde recurvis, longo-persistentibus; flores ca. 8.5 cm. longi, minute strigulosi; hypanthio 2.5 cm. longo, leviter striato; petala linearia, 1-2 mm. lata; pistillum velutinum, stylo 30-35 mm. longo; ovarium lineare, ca. 20 mm. longum, gynophoro 45 mm. longo; fructus ignotus.

An erect, loosely branched shrub 2-2.5 m. tall, the branchlets sparingly pilosulose, quadrangular, each face unisulcate; petioles terete, densely crispate-pilosulose, 14 mm. long, the leaf blades coriaceous, strongly venose, 9-nerved, 10.5 cm. long, 6-7.5 cm. wide, bilobed apically less than 1/3 of the length, the lobes acute, the base rounded-



Fig. 4. Holotype of *Bauhinia recurva* Cowan.

truncate, the upper surface of the blades glabrous except for crispate-pilosulose midrib, lower surface crispate-pilosulose on the strongly salient veins and veinlets, the ultimate areoles glabrous, the veins plane above; inflorescence terminal, 25 cm. long, pilosulose and with numerous glandular-malpighian hairs, the pedicels about 3.5 cm. long, strongly recurved at anthesis, persistent; hypanthium 2.5 cm. long, slightly striate, minutely strigulose and with numerous glandular-malpighian hairs, the lobes of the calyx 6 cm. long, linear, glabrous within, pubescent as the hypanthium externally; petals linear, long-acuminate, about 40 mm. long, 1-2 mm. wide; stamens glabrous, the filaments 6 cm. long, the anthers 6 mm. long, oblong; pistil velutinous, the stigma massive, acute, the style 30-35 mm. long, the ovary linear, about 20 mm. long, the gynophore 45 mm. long; fruit unknown.

TYPE: *Dawson 14387* (holotype R), "gallery forest area along road 19-19.5 km. north of São João de Aliança, region of the Chapado dos Veadeiros, Goiás, Brazil, April 19, 1956."

The nearest relative of *B. recurva* apparently is *B. longifolia* from which it may be distinguished by its more rigid, venose leaves, larger flowers, and longer, recurved pedicels.

Cassia conferta Benth. 14161 A very distinctive shrub in Minas Gerais and less commonly in Goiás; there is an earlier collection from the latter state (Macedo 3240).

Cassia hispidula Vahl var. *fagonioides* (Vog.) Benth. 14284 This species, at least the typical form, is exceedingly widespread, occurring from Mexico and the West Indies south through Central America to Venezuela, Guianas, and Brazil. In Brazil it was known previously from Pará, Ceará, Pernambuco, Parahyba, Maranhão, and Bahia.

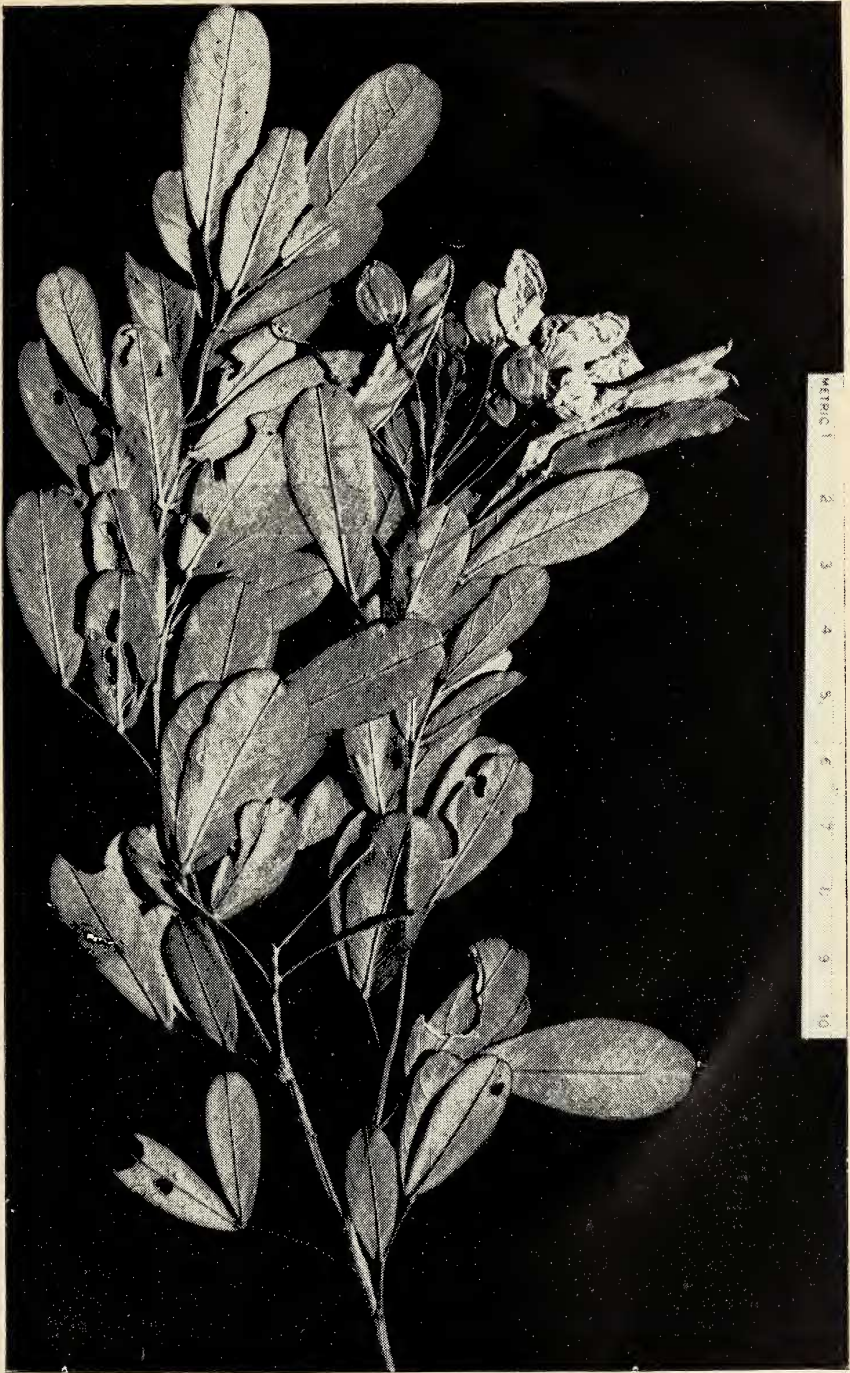
***Cassia machrisiana* sp. nov.**

Fig. 5

Arbuscula glabra, sparse ramosa, 0.5 m. alta, stipulis deciduis, foliis eglandularibus; foliola bijugata, oblanceolata vel oblongo-oblanceolata, rotundata et retusa, plerumque marginibus glanduloso-ciliolatis prope foliolorum basem, pilis rigidis, nitidis, nigris; inflorescentiae terminales, pedicellis 18-22 mm. longis; flores ca. 18 mm. longi, glabri; fructus compressus, glaber, ca. 35 mm. longus, 6-7 mm. latus, oblongus, 6-7-spermus, seminibus obliquis.

A glabrous, sparsely branched shrub 0.5 m. tall with slender branchlets, the stipules deciduous, about 1 mm. long, subulate; leaves with two pairs of subcoriaceous leaflets, the petioles 7-10 mm. long, the rachis 9-10 mm. long, terminated by a mucro about 1.5 mm. long, the lower pair of leaflets 20-25 mm. long, 8-13 mm. wide, the upper

Fig. 5. Holotype of *Cassia machrisiana* Cowan. ➤



pair 30-35 mm. long, 13-16 mm. wide, narrowed toward the base, obtuse, the apex rotund, retuse and mucronulate, the margin near the base with numerous stiff, shiny-black, glandular hairs, the venation prominulous on both sides; inflorescence terminal, corymbiform, about 6 cm. long, glabrous, the pedicels 18-22 mm. long, slender; perianth glabrous, the calyx yellowish, membranous, the sepals 12 mm. long, 4.5-5.5 mm. wide, elliptic, slightly concave, the blades of the petals 13-15 mm. long, 12-13 mm. wide, oval to orbicular, the claw 4-5 mm. long; stamens 10, equal, the filaments glabrous, 1-1.5 mm. long, the anthers pilosulose, oblong, 4.5-5 mm. long; pistil glabrous, the style about 10 mm. long, sigmoid, the ovary about 5 mm. long; fruits compressed laterally, oblong, glabrous, 35 mm. long, 6-7 mm. wide, the 6-7 seeds borne obliquely in the fruit.

TYPE: *Dawson 14598* (holotype R), "sandstone outcrop 7 km. south of Chapada dos Veadeiros, Goiás, Brazil, April 24, 1956."

It is always difficult to be certain that a new species is really new in a genus such as *Cassia*, but careful checking of the literature since Bentham's treatment of the genus in *Flora Brasiliensis* convinces me that *Cassia machrisiana* is heretofore undescribed. It is distinctly related to *C. conferta*, *C. ochracea*, and *C. punctulifera* in section *Absus*; with only the original description to judge by, it appears that the new species is most nearly related to *C. punctulifera* Harms, from which it differs by the lack of glandular punctations on most parts, glabrous perianth, obtuse sepals, and shorter petioles and rachis. *C. machrisiana* differs from its other near relatives by its glabrous inflorescence and thinner, retuse leaflets; its flowers are larger and the inflorescence more diffuse than those of *C. conferta*.

The species is named in honor of Mrs. Maybell Machris Low who contributed generously to the support of the botanical work of the Expedition.

Cassia mollifolia Harms 14819 A rare species which was described originally from Goiás. This collection has been identified by the description only.

Cassia multijuga Rich. 14999 Small to medium-sized tree occurring frequently through the warm zones of tropical South America as far south as Santa Catarina in Brazil.

Cassia occidentalis L. 14757 Wide-spread tropical weed.

Cassia pachyclada Harms 14721 This species is still known only from the state of Goiás and it is very rare there, if the number of collections is any indication.

Cassia dawsonii sp. nov.

Fig. 6

Arbuscula sparse ramosa 2 m. alta, ramis ramulisque glanduloso-pilosulis et dense puberulis; stipulae deciduae, subulatae, 5-6 mm. longae, glanduloso-pilosulae et puberulae; folia linearia, deorsum curvata, petiolo 25-35 mm. longo, eglandulari, glanduloso-pilosulo et puberulo, rachibus 12-16.5 cm. longis, glanduloso-pilosulis puberulisque, facie superiore bialatis, aliis erectis; foliola 23-50-jugata, sessilia, imbricata, coriacea, apice rotundata vel obtusa, base rotundata et inaequalia, orbicularia ad late ovata, foliolis juvenilibus 3.5-5 mm. longis, 3-5.5 mm. latis, margine glandularis et ciliolatis, foliolis maturis 9-15 mm. longis, 7-10 mm. latis, margine glanduloso-dentatis, venis venulisque prominulis; inflorescentia racemosa, terminalis, 15 cm. longa, axe glanduloso-hispidulo et puberulo, bracteis persistentibus, 2.5 mm. longis, 0.5 mm. latis, lanceolatis, acutis, externe puberulis, intus glabris, pedicello 32-40 mm. longo, glanduloso-hispidulo et puberulo, bracteolis 2, subulatis, 1-1.5 mm. longis; sepala herbacea, oblongo-elliptica, acuta, 15-17 mm. longa, 5.5 mm. lata, externe glanduloso-hispidula, intus glabris; petala obcuneato-obovata, apice rotundata, 20-25 mm. longa, 15-18 mm. lata, glabra, unguiculo ca. 3 mm. longo; stamina 9, aequalia vel subaequalia, glabra, filamentis 1.5-2 mm. longis, antheris 6-8 mm. longis, glabris, duobus incisuris fissentibus; stigma simplex, stylo glabro, crasso, 14 mm. longo; ovarium 3.5 mm. longum, aureo-pilosum; fructus ignotus.

A sparsely branched shrub 2 m. tall with the branches and branchlets glandular-pilosulose and densely puberulous; stipules deciduous, subulate, 5-6 mm. long, glandular-pilose and puberulous; leaves elongate-linear, recurved, the petioles 25-35 mm. long, eglandular, glandular-pilose and puberulous, the rachis 12-16.5 cm. long, pubescent as the petiole, bialate on the upper surface with the wings erect; leaflets 23-50-jugate, sessile, imbricate, coriaceous, rotund or merely obtuse at the apex, rotund and inequilateral at the base, orbicular to broadly ovate, the young leaves 3.5-5 mm. long, 3-5.5 mm. broad, margin glandular and ciliate, the axis glandular-hispidulous and puberulous, the bracts persistent, 2.5 mm. long, 0.5 mm. wide, lanceolate, acute, puberulous on the outer surface, glabrous within, the pedicels 32-40 mm. long, glandular-hispid and puberulous, the bracteoles 2, subulate, 1-1.5 mm. long; sepals herbaceous, oblong-elliptic, acute, 15-17 mm. long, 5.5 mm. wide, glandular-hispid externally, glabrous within; petals obcuneate-obovate, rotund apically, 20-25 mm. long, 15-18 mm. wide, glabrous, the claw about 3 mm. long; stamens 9, equal or subequal, glabrous, the filaments 1.5-2 mm. long, the

anthers 6-8 mm. long, opening by two longitudinal slits; stigma simple, the style glabrous, thick, 14 mm. long, the ovary 3.5 mm. long, golden-pilose; fruit unknown.

TYPE: *Dawson 14559* (holotype R), "roadside campo sujo 21 km. north of São João da Aliança, region of the Chapada dos Veadeiros, Goiás, Brazil, April 28, 1956."

This species was first collected by Glaziou in this same locality, but only in sterile condition. He gave it a name but supplied no descrip-



Fig. 6. Holotype of *Cassia dawsonii* Cowan.

tion; Harms (Fedde Rep. Spec. Nov. 20: 130, 1924.) published the name in an incidental note but contributed nothing that would enable one to identify the plant. A photograph of the Glaziou collection has been studied and it exactly matches this fertile material of Dawson's.

There are several other species with which this one is to be associated: *C. nummulariifolia*, *C. filicifolia*, *C. sincorana*, *C. pycnophylla*, and *C. ciliolata*. The species described here differs from all these in one or more respects involving size, shape, and/or number of leaflets, size of flowers, pubescence, etc.

Cassia rugosa Don 14157; 14264 Another poorly known species of southeastern Brasil and Paraguay. It appears to be more frequent in Minas Gerais than in Goiás.

Cassia setosa Vogel 14543 Very frequent in parts of Minas Gerais but apparently less common in São Paulo, Goiás, and Rio de Janeiro.

Cassia tagera L. 14535 Frequent mat-forming plant on dry sands or over rocks in the savannas and llanos of Venezuela and Colombia. It is also known from Brazil and Bolivia. R. E. Schultes has called attention to its possible utility in tropical areas for erosion control.

Cassia tetraphylla Desv. 14160; 14613 An exceedingly variable species within which Amshoff has defined several subspecific taxa, and there are probably others which also deserve recognition. It is native and rather common in the savannas and llanos of Venezuela, the Guianas, Colombia, and northern Brazil; it does not appear to be so frequent in south Brazil.

Cassia tora L. 14392 A tropical weed.

Cassia trichopoda Benth. 14912 An uncommon species from southern Brazil to Bolivia, Colombia, and Venezuela.

***Copaifera oblongifolia* Mart. ex Hayne, var. *dawsonii* var. nov. Fig. 7**

A *C. oblongifolia* var. *comosa* plus foliolis (6-7-jugatis), sepalis glabris externe differt; a *C. oblongifolia* var. *oblongifolia* ramulis foliolisque pilosis, sepalis glabris externe differt.

Tree 3-4 m. tall; vegetative parts pilose; stipules caducous; leaves oblong in outline, the petiole 3 mm. long, the rachis 4.5-6.5 cm. long, the leaflets in 6-7 pairs, punctate, the petiolules 0.5-1 mm. long, the blades 11-22 mm. long, 5-8 mm. wide, oblong, obtuse at the base and at the apex, the latter usually slightly retuse and mucronulate; venation reticulate, the veins not obvious, the pubescence dense below, sparingly and somewhat glabrescent on the upper surface; inflorescences terminal on short lateral branchlets, sessile or subsessile,

the axis pilose, 4-6.5 cm. long; flowers sessile, the calyx 3.4-4 mm. long, glabrous on the outer surface, densely suberect-villose within; stamens glabrous, 5 mm. long; margins of the ovary and the gynophore densely villose; fruit unknown.

TYPE: *Dawson 14491* (holotype R), "tree 3-4 meters tall, gallery forest margin along the stream 18 km. north of São João da Aliança, region of the Chapada dos Veadeiros, Goiás, Brazil, April 20, 1956."

The degree of relationship between this variety and the typical one is much closer than that which exists between the latter and the var. *comosa*. The glabrous outer surfaces of the sepals and the pilose leaflets serve to distinguish the new variety from the other two. There is even some similarity to *C. langsdorffii*, but it is not any of the described varieties of that species and in respect to the leaflets, at least, it is more like the type of *C. oblongifolia*.

Copaifera sp. 14445 I could not satisfactorily place this in Dwyer's monograph but I doubt that it is a new taxon.

LOTOIDEAE

Aeschynomene paniculata Willd. ex Vogel 14200

Aeschynomene paucifolia Vogel (Det. V. E. Rudd) 14822

Bowdichia virgilioides H. B. K. 14490 Very common, wide-ranging trees in or at the edge of savannas or scrub savannas in Venezuela, and Colombia, south through Brazil to Paraguay — decreasingly frequent southward.

Calopogonium caeruleum (Benth.) Sauv. 14982 Frequent twining herb in Central America, West Indies, and the tropical parts of South America.

Calopogonium velutinum (Benth.) Amsh. 15029 This very distinctive species was described on material from Bahia, but it is known as far north as Surinam, according to Amshoff. Four collections from British Guiana (de la Cruz 2592, 2937, 3620, 4406) should also be referred to this species, thereby extending its range even more.

Campyosema coriaceum (Nees & Mart.) Benth. 14450; 14681 An uncommon shrub known previously only from Minas Gerais. This is apparently the first report from Goiás.

Canavalia picta Mart. ex Benth. 15030 Very similar to *C. grandifolia* Benth. but with slightly smaller flowers and puberulous vegetative parts.

Centrosema bifidum Benth. 14919; 15045 A rare vine of south-eastern Brazil; this is one of the first collections since the species was described.

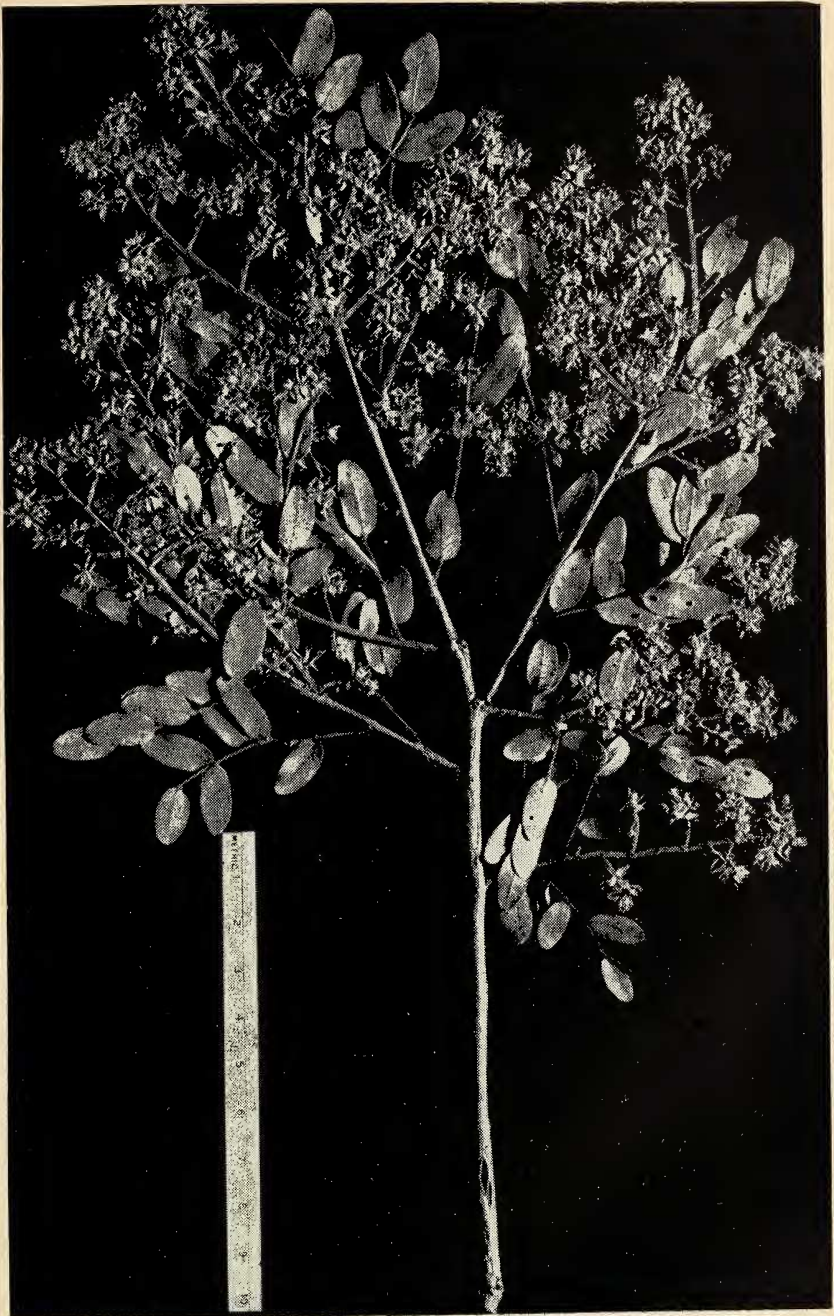


Fig. 7. Holotype of *Copaifera oblongifolia* Mart. ex Hayne, var. *dawsonii* Cowan.

Centrosema fasciculatum Benth. (ex descr. & photo) 15126 Rare vine described from Matto Grosso; this may well be the first record from Goiás.

Centrosema platycarpum Benth. 15089 Woody vine occurring rarely in southern Brazil but also known by a Spruce collection from eastern Amazonian Peru.

Centrosema pubescens Benth. 14502 Frequent vine in tropical America and introduced in Malaysia.

Centrosema sagittatum (H. & B.) Brandg. ex Riley 14361 Frequent vine found in tropical America as far south as Patagonia and southern Brazil.

Collea crassifolia Benth. 14470. This material matches the photograph of the type quite well but it is unlike later collections cited by Benth³ as this species. The original material showed well-developed peduncles as does the present collection; some of the later collections cited by Benth³ have short, much congested inflorescences.

Collaea martii Benth. 14582; 14658a Apparently restricted to southeastern Brazil; uncommon or rare.

Crotalaria acutiflora Benth. 14399; 14844; 15081 Originally described from Goiás but very poorly known. These collections were identified by type photo and description solely.

Crotalaria nitens H. B. K. 14500 A variable, wide-spread species.

Crotalaria pohliana Benth. 14751c Although this species was described from southern Brazil it is better known from collections made in eastern Bolivia.

Crotalaria stipularis Desv. 14921 A low plant in savannas or grasslands from Colombia, Venezuela, and the Guianas, south to Argentina.

Crotalaria unifoliolata Benth. 14150 A very distinctive species in most of the southern states of Brazil, but everywhere uncommon.

Crotalaria vespertilio Benth. 14733 Rarely collected species described from Goiás but known also by one collection from Minas Gerais.

Crotalaria sp.? 14549a This may represent a new species, related to *C. sagittalis* L., from which this collection differs primarily in leaflet shape.

Crotalaria sp.? 14372 Possibly an undescribed species; certainly not very closely related to any well-known species.

Desmodium asperum Desv. 15049 A coarse subshrub which is found frequently throughout tropical America.

³ Flora Brasiliensis 15 (1):151.1859.

Desmodium discolor Vog. 14366; 14435 A frequent subshrub in southern Brazil, particularly in Minas Gerais.

Desmodium leiocarpum (Spreng.) G. Don 15094 Frequent in Minas Gerais but not elsewhere. This may be the first record of the species in Goiás.

Desmodium platycarpum Benth. 14414 A poorly-known species of southern Brazil, apparently rare.

Desmodium tortuosum (Sw.) DC. 14485; 15128 Weedy herb from subtropical Florida through tropical northern South America. This collection represents a considerable southern extension of the range of the species.

Dioclea argentea Desv. 14976; 15079.

Dioclea sp. 14378; 14828; 15001

This genus so seriously needs revisionary study that many collections must presently go unnamed. Occasionally new species come to light which are sufficiently distinct to describe; some of these collections may represent undescribed species but a strong element of doubt exists in each instance.

Eriosema erythropilum Harms 14751a This determination was made solely on the basis of a type photograph and the original description, both of which seem to fit this collection very well.

Eriosema longifolium Benth. 14815 An uncommon species described from Minas Gerais but known also from Paraná and now Goiás.

Galactia glaucescens H. B. K. 15011 A wide-spread species, from Colombia and Venezuela to Ecuador and Bolivia south to southern Brazil and Paraguay.

Harpalyce brasiliiana Benth. 14998; 15064 Frequent in Minas Gerais but apparently uncommon in Ceará, Piauí, and Goiás.

Indigofera lespedezioides H. B. K. 14370 Common in Colombia and Venezuela but less frequent in Bolivia and Brazil. It occurs also in southern Mexico and the West Indies.

Machaerium aculeatum (DC.) Raddi 14471 Some forms of this species have been referred to as *M. angustifolium* Vogel, but this is treated as a synonym by several authorities. The species is known from Central America to Paraguay, east to the Guianas.

Periandra coccinea Benth. 14561; 14967 A rare species of southeastern Brazil.

Periandra densiflora Benth. 14816; 14920 An infrequent vine of Minas Gerais; these are among the very few collections from Goiás.

Periandra mediterranea (Vell.) Taub. 14448 Burkart has pointed out the necessity of adopting this name over the better-known *P. dulcis*.

It is primarily south Brazilian in distribution, known in Minas Gerais, Ceará, Paraná, Pará, Goiás, Bahia, and São Paulo.

Phaseolus appendiculatus Benth. 14904; 15018 A variable, wide-spread vine, occurring from Central America to Paraguay.

Phaseolus clitorioides Mart. 14430

Phaseolus peduncularis H. B. K. 14800 Weedy vine found from Central America and West Indies south to Paraná.

Poiretia coriifolia Vogel 14279; 14693

Pterodon polygalaeflorus Benth. 14223 This genus is very similar to *Dipteryx* (incl. *Taralea*), but there may be justification for keeping it separate, for it has a strikingly different aspect. The species referred to here is one of southeastern Brasil - Minas Gerais, Goiás, Maranhão, Matto Grosso, Piauhý.

Stylosanthes capitata Vogel 14190 Known from Venezuela to Minas Gerais in Brazil but nowhere very well-known.

Stylosanthes guianensis (Aubl.) Sw. 14405; 14437; 14880 A very wide-spread weedy plant from Central America through tropical South America to Paraguay.

Stylosanthes guianensis (Aubl.) Sw. var. *gracilis* (H.B.K.) Vogel 14813; 14862 This has been considered a distinct species by some authors but it is usually assigned varietal rank. It occurs sporadically in the same range as the typical variety.

Tephrosia leptostachys DC. 15057 Infrequent species best-known in Colombia and Venezuela but known from southern Brazil by a few collections. This is the first report from Goiás.

Zornia diphylla (L.) Pers. 14183 A weed of the tropics and sub-tropics around the world.

Zornia virgata Moric. 14564 A frequent plant in Minas Gerais but known also in São Paulo and now Goiás, less frequently.